CLAIMS AMENDMENTS

1-18. (CANCELLED)

19. An apparatus for determining a delivery pressure at a mask during pressure assistance of a patient from remote measurements of pressure comprising:

a mask;

a conduit with a proximate end and a distal portion, wherein the proximate end is coupled to the mask;

a controllable pressure delivery device coupled to the distal portion of the conduit, the device for providing a gas at a pressure above atmospheric to the airway of the patient through the mask and conduit;

a pressure sensor configured to provide a distal pressure signal proportional to the pressure at the pressure delivery device;

wherein the pressure delivery device comprises a processor configured and adapted to:

select a desired mask pressure for setting a delivery pressure for the patient;

continuously determine a pressure characteristic for the conduit;

calculate an estimated mask pressure as a function of the distal pressure signal and the determined pressure characteristic;

control the pressure delivery device to deliver the desired mask pressure as a function of the estimated mask pressure.

20. The apparatus of claim 19 further comprising a flow sensor configured to provide a flow signal representative of airflow in the conduit and wherein the processor is configured and adapted to determine the pressure characteristic for the conduit as a function of the flow signal.

21. The apparatus of claim 20 wherein the processor is configured and adapted to calculate the estimate mask pressure by subtracting the pressure characteristic from a measure of the distal pressure signal.

22. The apparatus of claim 21 wherein the processor is configured and adapted to determine the pressure characteristic for the conduit as a function of the flow signal with empirically determined constants.

23. The apparatus of claim 22 wherein the processor is configured and adapted to determine the pressure characteristic by calculating the pressure characteristic as a function of a sign of the measure of airflow and a sign of a squared measure of airflow.

24. A method for determining a delivery pressure at a mask during pressure assistance of a patient from remote measurements of pressure comprising:

providing a controllable pressure delivery device with a mask and conduit;

delivering pressure treatment to a patient through the conduit to the mask with the pressure delivery device;

measuring a pressure distally from the mask;

continuously determining a pressure characteristic for the conduit;

calculating an estimated mask pressure as a function of the measured distal pressure and the determined pressure characteristic;

selecting a desired mask pressure for setting a delivery pressure for the patient;

controlling the pressure delivery device to deliver the desired mask pressure as a function of the estimated mask pressure.

25. The method of claim 24 further comprising the step of measuring airflow in the conduit, and wherein the step of determining the pressure characteristic for the conduit includes the sub-step of calculating the pressure characteristic as a function of the measured airflow.

26. The method of claim 25 wherein the step of calculating an estimated mask pressure includes the sub-step of subtracting the pressure characteristic from the measured distal pressure.

27. The method of claim 26 further comprising the step of determining empirical constants for the conduit, and wherein the step of determining the pressure characteristic calculates the pressure characteristic as a further function of the empirical constants.

28. The method of claim 27 wherein the pressure characteristic of the conduit is calculated as a function of a sign of the measure of airflow and a sign of a squared measure of airflow.

29. A method for determining a pressure at a mask during pressure assistance of a patient from remote measurements of pressure comprising:

providing an airway pressure treatment apparatus with a mask and conduit;

delivering airway pressure treatment to a patient through the conduit to the mask with the apparatus;

measuring a pressure distally from the mask;

continuously determining a pressure drop to the mask for the conduit; and

adjusting the measured distal pressure as a function of the determined pressure drop to calculate the pressure at the mask.

30. The method of claim 29 further comprising the step of measuring airflow in the conduit, and wherein the step of determining the pressure drop for the conduit includes the sub-step of calculating the pressure drop as a function of the measured airflow.

31. The method of claim 30 wherein the step of adjusting the measured distal pressure includes the step of subtracting the pressure drop.

32. The method of claim 31 further comprising the step of determining empirical constants for the conduit, and wherein the step of determining the pressure drop includes calculating the pressure drop as a further function of the empirical constants.

33. The method of claim 32 wherein the pressure drop of the conduit is calculated as a function of a sign of the measure of airflow and a sign of a squared measure of airflow.

34. The method of claim 29 further comprising the step of controlling the airway pressure treatment as a function of the calculated pressure at the mask.